SEQUENCE LISTING

<110> Aventis Pasteur Limited
Murdin et al.

<120> Chlamydia antigens and corresponding DNA fragments and uses thereof

<130> 77813-2

<140> PCT/CA99/01147
<141> 1999-12-01

<150> US 60/110,427
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gta atc aca acc ccc tca gga aaa ggt gca gtt aaa tgt gga ggg gat 547
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Pro Ile Leu Leu Leu Asp Asn Gln Gly Asn Ala Tyr Glu Asn His Asp
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tta gga aaa act caa gac ttt tca ttt gtg cag ctc tct gct ctg ggt   1747
Leu Gly Lys Thr Gln Asp Phe Ser Phe Val Gln Leu Ser Ala Leu Gly
    535                 540                 545

act gca aca act aca gat gtt cca gcg gtt cct aca gta gca act cct   1795
Thr Ala Thr Thr Thr Asp Val Pro Ala Val Pro Thr Val Ala Thr Pro
550                 555                 560                 565

acg cac tat ggg tat caa ggt act tgg gga atg act tgg gtt gat gat   1843
Thr His Tyr Gly Tyr Gln Gly Thr Trp Gly Met Thr Trp Val Asp Asp
                570                 575                 580

acc gca agc act cca aag act aag aca gcg aca tta gct tgg acc aat   1891
Thr Ala Ser Thr Pro Lys Thr Lys Thr Ala Thr Leu Ala Trp Thr Asn
            585                 590                 595

aca ggc tac ctt ccg aat cct gag cgt caa gga cct tta gtt cct aat   1939
Thr Gly Tyr Leu Pro Asn Pro Glu Arg Gln Gly Pro Leu Val Pro Asn
        600                 605                 610
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agc ctt tgg gga tct ttt tca gac atc caa gcg att caa ggt gtc ata   1987
Ser Leu Trp Gly Ser Phe Ser Asp Ile Gln Ala Ile Gln Gly Val Ile
    615                 620                 625

gag aga agt gct ttg act ctt tgt tca gat cga ggc ttc tgg gct gcg   2035
Glu Arg Ser Ala Leu Thr Leu Cys Ser Asp Arg Gly Phe Trp Ala Ala
630                 635                 640                 645

gga gtc gcc aat ttc tta gat aaa gat aag aaa ggg gaa aaa cgc aaa   2083
Gly Val Ala Asn Phe Leu Asp Lys Asp Lys Lys Gly Glu Lys Arg Lys
                650                 655                 660

tac cgt cat aaa tct ggt gga tat gct atc gga ggt gca gcg caa act   2131
Tyr Arg His Lys Ser Gly Gly Tyr Ala Ile Gly Gly Ala Ala Gln Thr
            665                 670                 675

tgt tct gaa aac tta att agc ttt gcc ttt tgc caa ctc ttt ggt agc   2179
Cys Ser Glu Asn Leu Ile Ser Phe Ala Phe Cys Gln Leu Phe Gly Ser
        680                 685                 690

gat aaa gat ttc tta gtc gct aaa aat cat act gat acc tat gca gga   2227
Asp Lys Asp Phe Leu Val Ala Lys Asn His Thr Asp Thr Tyr Ala Gly
    695                 700                 705

gcc ttc tat atc caa cac att aca gaa tgt agt ggg ttc ata ggt tgt   2275
Ala Phe Tyr Ile Gln His Ile Thr Glu Cys Ser Gly Phe Ile Gly Cys
710                 715                 720                 725

ctc tta gat aaa ctt cct ggc tct tgg agt cat aaa ccc ctc gtt tta   2323
Leu Leu Asp Lys Leu Pro Gly Ser Trp Ser His Lys Pro Leu Val Leu
                730                 735                 740

gaa ggg cag ctc gct tat agc cac gtc agt aat gat ctg aag aca aag   2371
Glu Gly Gln Leu Ala Tyr Ser His Val Ser Asn Asp Leu Lys Thr Lys
            745                 750                 755

tat act gcg tat cct gag gtg aaa ggt tct tgg ggg aat aat gct ttt   2419
Tyr Thr Ala Tyr Pro Glu Val Lys Gly Ser Trp Gly Asn Asn Ala Phe
        760                 765                 770

aac atg atg ttg gga gct tct tct cat tct tat cct gaa tac ctg cat   2467
Asn Met Met Leu Gly Ala Ser Ser His Ser Tyr Pro Glu Tyr Leu His
    775                 780                 785

tgt ttt gat acc tat gct cca tac atc aaa ctg aat ctg acc tat ata   2515
Cys Phe Asp Thr Tyr Ala Pro Tyr Ile Lys Leu Asn Leu Thr Tyr Ile
790                 795                 800                 805

cgt cag gac agc ttc tcg gag aaa ggt aca gaa gga aga tct ttt gat   2563
Arg Gln Asp Ser Phe Ser Glu Lys Gly Thr Glu Gly Arg Ser Phe Asp
                810                 815                 820

gac agc aac ctc ttc aat tta tct ttg cct ata ggg gtg aag ttt gag   2611
Asp Ser Asn Leu Phe Asn Leu Ser Leu Pro Ile Gly Val Lys Phe Glu
            825                 830                 835
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aag ttc tct gat tgt aat gac ttt tct tat gat ctg act tta tcc tat   2659
Lys Phe Ser Asp Cys Asn Asp Phe Ser Tyr Asp Leu Thr Leu Ser Tyr
        840                 845                 850

gtt cct gat ctt atc cgc aat gat ccc aaa tgc act aca gca ctt gta   2707
Val Pro Asp Leu Ile Arg Asn Asp Pro Lys Cys Thr Thr Ala Leu Val
    855                 860                 865

atc agc gga gcc tct tgg gaa act tat gcc aat aac tta gca cga cag   2755
Ile Ser Gly Ala Ser Trp Glu Thr Tyr Ala Asn Asn Leu Ala Arg Gln
870                 875                 880                 885

gcc ttg caa gtg cgt gca ggc agt cac tac gcc ttc tct cct atg ttt   2803
Ala Leu Gln Val Arg Ala Gly Ser His Tyr Ala Phe Ser Pro Met Phe
                890                 895                 900

gaa gtg ctc ggc cag ttt gtc ttt gaa gtt cgt gga tcc tca cgg att   2851
Glu Val Leu Gly Gln Phe Val Phe Glu Val Arg Gly Ser Ser Arg Ile
            905                 910                 915

tat aat gta gat ctt ggg ggt aag ttc caa ttc taggagcgtc tctcatgtct 2904
Tyr Asn Val Asp Leu Gly Gly Lys Phe Gln Phe
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ggagatataa ctctgcaaaa ccttggggat tcggcagctt taacgaaggg ttgtttttct   240
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aagtctagtg ctgaaggcgc agccctttct gttacaactg ataaaaatct gtcgctaaca   360
ggattttcga gtcttacttt cttagcggcc ccatcatcgg taatcacaac cccctcagga   420
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aacagcacgg gatcgatttc ttttgaaggg aataaatcga gcgcaacagg gaaaaaaggt   600
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ccaaatgcac tacagcactt gtaatcagcg gagcccactt cttgggaaac ttatgccaat  2640
aacttagcac gacaggcctt gcaagtgcgt gcaggcagtc actacgcctt ctctcctatg  2700
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<220>
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<222> (101)..(2884)

<400> 5

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tgtggtgaaa taatttgtta aaccacctat agccctctac atg aaa tcc tct ctt   115
                                            Met Lys Ser Ser Leu
                                              1               5

cat tgg ttt tta atc tcg tca tct tta gca ctt ccc ttg tca cta aat   163
His Trp Phe Leu Ile Ser Ser Ser Leu Ala Leu Pro Leu Ser Leu Asn
                  10                  15                  20

ttc tct gcg ttt gct gct gtt gtt gaa atc aat cta gga cct acc aat   211
Phe Ser Ala Phe Ala Ala Val Val Glu Ile Asn Leu Gly Pro Thr Asn
              25                  30                  35

agc ttc tct gga cca gga acc tac act cct cca gcc caa aca aca aat   259
Ser Phe Ser Gly Pro Gly Thr Tyr Thr Pro Pro Ala Gln Thr Thr Asn
          40                  45                  50
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gca gat gga act atc tat aat cta aca ggg gat gtc tca atc acc aat   307
Ala Asp Gly Thr Ile Tyr Asn Leu Thr Gly Asp Val Ser Ile Thr Asn
     55                  60                  65

gca gga tct ccg aca gct cta acc gct tcc tgc ttt aaa gaa act act   355
Ala Gly Ser Pro Thr Ala Leu Thr Ala Ser Cys Phe Lys Glu Thr Thr
 70                  75                  80                  85

ggg aat ctt tct ttc caa ggc cac ggc tac caa ttt ctc cta caa aat   403
Gly Asn Leu Ser Phe Gln Gly His Gly Tyr Gln Phe Leu Leu Gln Asn
                 90                  95                 100

atc gat gcg gga gcg aac tgt acc ttt acc aat aca gct gca aat aag   451
Ile Asp Ala Gly Ala Asn Cys Thr Phe Thr Asn Thr Ala Ala Asn Lys
            105                 110                 115

ctt ctc tcc ttt tca gga ttc tcc tat ttg tca cta ata caa acc acg   499
Leu Leu Ser Phe Ser Gly Phe Ser Tyr Leu Ser Leu Ile Gln Thr Thr
        120                 125                 130

aat gct acc aca gga aca gga gcc atc aag tcc aca gga gct tgt tct   547
Asn Ala Thr Thr Gly Thr Gly Ala Ile Lys Ser Thr Gly Ala Cys Ser
    135                 140                 145

att cag tcg aac tat agt tgc tac ttt ggc caa aac ttt tct aat gac   595
Ile Gln Ser Asn Tyr Ser Cys Tyr Phe Gly Gln Asn Phe Ser Asn Asp
150                 155                 160                 165

aat gga ggc gcc ctc caa ggc agc tct atc agt cta tcg cta aac ccc   643
Asn Gly Gly Ala Leu Gln Gly Ser Ser Ile Ser Leu Ser Leu Asn Pro
                170                 175                 180

aac cta acg ttt gcc aaa aac aaa gca acg caa aaa ggg ggt gcc ctc   691
Asn Leu Thr Phe Ala Lys Asn Lys Ala Thr Gln Lys Gly Gly Ala Leu
            185                 190                 195

tat tcc acg gga ggg att aca att aac aat acg tta aac tca gca tca   739
Tyr Ser Thr Gly Gly Ile Thr Ile Asn Asn Thr Leu Asn Ser Ala Ser
        200                 205                 210

ttt tct gaa aat acc gcg gcg aac aat ggc gga gcc att tac acg gaa   787
Phe Ser Glu Asn Thr Ala Ala Asn Asn Gly Gly Ala Ile Tyr Thr Glu
    215                 220                 225

gct agc agt ttt att agc agc aac aaa gca att agc ttt ata aac aat   835
Ala Ser Ser Phe Ile Ser Ser Asn Lys Ala Ile Ser Phe Ile Asn Asn
230                 235                 240                 245

agt gtg acc gca acc tca gct aca ggg gga gcc att tac tgt agt agt   883
Ser Val Thr Ala Thr Ser Ala Thr Gly Gly Ala Ile Tyr Cys Ser Ser
                250                 255                 260

aca tca gcc ccc aaa cca gtc tta act cta tca gac aac ggg gaa ctg   931
Thr Ser Ala Pro Lys Pro Val Leu Thr Leu Ser Asp Asn Gly Glu Leu
            265                 270                 275
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aac ttt ata gga aat aca gca att act agt ggt ggg gcg att tat act   979
Asn Phe Ile Gly Asn Thr Ala Ile Thr Ser Gly Gly Ala Ile Tyr Thr
        280                 285                 290

gac aat cta gtt ctt tct tct gga gga cct acg ctt ttt aaa aac aac  1027
Asp Asn Leu Val Leu Ser Ser Gly Gly Pro Thr Leu Phe Lys Asn Asn
    295                 300                 305

tct ggc tat gat act gca gct ccc tta gga gga gca att gcg att gct  1075
Ser Gly Tyr Asp Thr Ala Ala Pro Leu Gly Gly Ala Ile Ala Ile Ala
310                 315                 320                 325

gac tct gga tct ttg agt ctt tcg gct ctt ggt gga gac atc act ttt  1123
Asp Ser Gly Ser Leu Ser Leu Ser Ala Leu Gly Gly Asp Ile Thr Phe
                330                 335                 340

gaa gga aac aca gta gtc aaa gga gct tct tcg agt cag acc act acc  1171
Glu Gly Asn Thr Val Val Lys Gly Ala Ser Ser Ser Gln Thr Thr Thr
            345                 350                 355

aga aat tct att aac atc gga aac acc aat gct aag att gta cag ctg  1219
Arg Asn Ser Ile Asn Ile Gly Asn Thr Asn Ala Lys Ile Val Gln Leu
        360                 365                 370

cga gcc tct caa ggc aat act atc tac ttc tat gat cct ata aca act  1267
Arg Ala Ser Gln Gly Asn Thr Ile Tyr Phe Tyr Asp Pro Ile Thr Thr
    375                 380                 385

agc atc act gca gct ctc tca gat gct cta aac tta aat ggt cct gac  1315
Ser Ile Thr Ala Ala Leu Ser Asp Ala Leu Asn Leu Asn Gly Pro Asp
390                 395                 400                 405

ctt gca ggg aat cct gca tat caa gga acc atc gta ttt tct gga gag  1363
Leu Ala Gly Asn Pro Ala Tyr Gln Gly Thr Ile Val Phe Ser Gly Glu
                410                 415                 420

aag ctc tcg gaa gca gaa gct gca gaa gct gat aat ctc aaa tct aca  1411
Lys Leu Ser Glu Ala Glu Ala Ala Glu Ala Asp Asn Leu Lys Ser Thr
            425                 430                 435

att cag caa cct cta act ctt gcg gga ggg caa ctc tct ctt aaa tca  1459
Ile Gln Gln Pro Leu Thr Leu Ala Gly Gly Gln Leu Ser Leu Lys Ser
        440                 445                 450

gga gtc act cta gtt gct aag tcc ttt tcg caa tct ccg ggc tct acc  1507
Gly Val Thr Leu Val Ala Lys Ser Phe Ser Gln Ser Pro Gly Ser Thr
    455                 460                 465

ctc ctc atg gat gca ggg acc aca tta gaa acc gct gat ggg atc act  1555
Leu Leu Met Asp Ala Gly Thr Thr Leu Glu Thr Ala Asp Gly Ile Thr
470                 475                 480                 485

atc aat aat ctt gtt ctc aat gta gat tcc tta aaa gag acc aag aag  1603
Ile Asn Asn Leu Val Leu Asn Val Asp Ser Leu Lys Glu Thr Lys Lys
                490                 495                 500
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ggc acg cta aaa gca aca caa gca agt cag aca gtc act tta tct gga   1651
Gly Thr Leu Lys Ala Thr Gln Ala Ser Gln Thr Val Thr Leu Ser Gly
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tcg ctc tct ctt gta gat cct tct gga aat gtc tac gaa gat gtc tct   1699
Ser Leu Ser Leu Val Asp Pro Ser Gly Asn Val Tyr Glu Asp Val Ser
        520                 525                 530

tgg aat aac cct caa gtc ttt tct tgt ctc act ctt act gct gac gac   1747
Trp Asn Asn Pro Gln Val Phe Ser Cys Leu Thr Leu Thr Ala Asp Asp
    535                 540                 545

ccc gcg aat att cac atc aca gac tta gct gct gat ccc cta gaa aaa   1795
Pro Ala Asn Ile His Ile Thr Asp Leu Ala Ala Asp Pro Leu Glu Lys
550                 555                 560                 565

aat cct atc cat tgg gga tac caa ggg aat tgg gca tta tct tgg caa   1843
Asn Pro Ile His Trp Gly Tyr Gln Gly Asn Trp Ala Leu Ser Trp Gln
                570                 575                 580

gag gat act gcg act aaa tcc aaa gca gcg act ctt acc tgg aca aaa   1891
Glu Asp Thr Ala Thr Lys Ser Lys Ala Ala Thr Leu Thr Trp Thr Lys
            585                 590                 595

aca gga tac aat ccg aat cct gag cgt cgt gga acc tta gtt gct aac   1939
Thr Gly Tyr Asn Pro Asn Pro Glu Arg Arg Gly Thr Leu Val Ala Asn
        600                 605                 610

acg cta tgg gga tcc ttt gtt gat gtg cgc tcc ata caa cag ctt gta   1987
Thr Leu Trp Gly Ser Phe Val Asp Val Arg Ser Ile Gln Gln Leu Val
    615                 620                 625

gcc act aaa gta cgc caa tct caa gaa act cgc ggc atc tgg tgt gaa   2035
Ala Thr Lys Val Arg Gln Ser Gln Glu Thr Arg Gly Ile Trp Cys Glu
630                 635                 640                 645

ggg atc tcg aac ttc ttc cat aaa gat agc acg aag ata aat aaa ggt   2083
Gly Ile Ser Asn Phe Phe His Lys Asp Ser Thr Lys Ile Asn Lys Gly
                650                 655                 660

ttt cgc cac ata agt gca ggt tat gtt gta gga gcg act aca aca tta   2131
Phe Arg His Ile Ser Ala Gly Tyr Val Val Gly Ala Thr Thr Thr Leu
            665                 670                 675

gct tct gat aat ctt atc act gca gcc ttc tgc caa tta ttc ggg aaa   2179
Ala Ser Asp Asn Leu Ile Thr Ala Ala Phe Cys Gln Leu Phe Gly Lys
        680                 685                 690

gat aga gat cac ttt ata aat aaa aat aga gct tct gcc tat gca gct   2227
Asp Arg Asp His Phe Ile Asn Lys Asn Arg Ala Ser Ala Tyr Ala Ala
    695                 700                 705

tct ctc cat ctc cag cat cta gcg acc ttg tct tct cca agc ttg tta   2275
Ser Leu His Leu Gln His Leu Ala Thr Leu Ser Ser Pro Ser Leu Leu
710                 715                 720                 725
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cag atc agc tat atc tat agt aaa aat act atg aaa acc tat tac acc   2371
Gln Ile Ser Tyr Ile Tyr Ser Lys Asn Thr Met Lys Thr Tyr Tyr Thr
            745                 750                 755

caa gca cca aag gga gag agc tcg tgg tat aat gac ggt tgc gct ctg   2419
Gln Ala Pro Lys Gly Glu Ser Ser Trp Tyr Asn Asp Gly Cys Ala Leu
        760                 765                 770

gaa ctt gcg agc tcc cta cca cac act gct tta agc cat gag ggt ctc   2467
Glu Leu Ala Ser Ser Leu Pro His Thr Ala Leu Ser His Glu Gly Leu
    775                 780                 785

ttc cac gcg tat ttt cct ttc atc aaa gta gaa gct tcg tac ata cac   2515
Phe His Ala Tyr Phe Pro Phe Ile Lys Val Glu Ala Ser Tyr Ile His
790                 795                 800                 805

caa gat agc ttc aaa gaa cgt aat act acc ttg gta cga tct ttc gat   2563
Gln Asp Ser Phe Lys Glu Arg Asn Thr Thr Leu Val Arg Ser Phe Asp
                810                 815                 820

agc ggt gat tta att aac gtc tct gtg cct att gga att acc ttc gag   2611
Ser Gly Asp Leu Ile Asn Val Ser Val Pro Ile Gly Ile Thr Phe Glu
            825                 830                 835

aga ttc tcg aga aac gag cgt gcg tct tac gaa gct act gtc atc tac   2659
Arg Phe Ser Arg Asn Glu Arg Ala Ser Tyr Glu Ala Thr Val Ile Tyr
        840                 845                 850

gtt gcc gat gtc tat cgt aag aat cct gac tgc acg aca gct ctc cta   2707
Val Ala Asp Val Tyr Arg Lys Asn Pro Asp Cys Thr Thr Ala Leu Leu
    855                 860                 865

atc aac aat acc tcg tgg aaa act aca gga acg aat ctc tca aga caa   2755
Ile Asn Asn Thr Ser Trp Lys Thr Thr Gly Thr Asn Leu Ser Arg Gln
870                 875                 880                 885

gct ggt atc gga aga gca ggg atc ttt tat gcc ttc tct cca aat ctt   2803
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gag gtc aca agt aac cta tct atg gaa att cgt gga tct tca cgc agc   2851
Glu Val Thr Ser Asn Leu Ser Met Glu Ile Arg Gly Ser Ser Arg Ser
            905                 910                 915

tac aat gca gat ctt gga ggt aag ttc cag ttc taaaagcgtt cctgatccct 2904
Tyr Asn Ala Asp Leu Gly Gly Lys Phe Gln Phe
        920                 925

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Met Lys Ile Pro Leu
1 5

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His Lys Leu Leu Ile Ser Ser Thr Leu Val Thr Pro Ile Leu Leu Ser
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Ile Ala Thr Tyr Gly Ala Asp Ala Ser Leu Ser Pro Thr Asp Ser Phe
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Asp Gly Ala Gly Gly Ser Thr Phe Thr Pro Lys Ser Thr Ala Asp Ala
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120 125 130

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            185                 190                 195

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Lys Leu Gly Gly Ala Ile Tyr Ser Ser Ala Ala Ala Ser Ile Ser Gly
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Asn Thr Gly Gln Leu Val Phe Met Asn Asn Lys Gly Glu Thr Gly Gly
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ggg gct ctg ggc ttt gaa gcc agc tcc tcg att act caa aat agc tcc   835
Gly Ala Leu Gly Phe Glu Ala Ser Ser Ser Ile Thr Gln Asn Ser Ser
230                 235                 240                 245

ctt ttc ttc tct gga aac act gca aca gat gct gca ggc aag ggc ggg   883
Leu Phe Phe Ser Gly Asn Thr Ala Thr Asp Ala Ala Gly Lys Gly Gly
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gcc att tat tgt gaa aaa aca gga gag act cct act ctt act atc tct   931
Ala Ile Tyr Cys Glu Lys Thr Gly Glu Thr Pro Thr Leu Thr Ile Ser
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gga aat aaa agt ctg acc ttc gcc gag aac tct tca gta act caa ggc   979
Gly Asn Lys Ser Leu Thr Phe Ala Glu Asn Ser Ser Val Thr Gln Gly
        280                 285                 290

gga gca atc tgt gcc cat ggt cta gat ctt tcc gct gct ggc cct acc   1027
Gly Ala Ile Cys Ala His Gly Leu Asp Leu Ser Ala Ala Gly Pro Thr
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cta ttt tca aat aat aga tgc ggg aac aca gct gca ggc aag ggc ggc   1075
Leu Phe Ser Asn Asn Arg Cys Gly Asn Thr Ala Ala Gly Lys Gly Gly
310                 315                 320                 325

gct att gca att gcc gac tct gga tct tta agt ctc tct gca aat caa   1123
Ala Ile Ala Ile Ala Asp Ser Gly Ser Leu Ser Leu Ser Ala Asn Gln
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gga gac atc acg ttc ctt ggc aac act cta acc tca acc tcc gcg cca   1171
Gly Asp Ile Thr Phe Leu Gly Asn Thr Leu Thr Ser Thr Ser Ala Pro
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aca tcg aca cgg aat gct atc tac ctg gga tcg tca gca aaa att acg   1219
Thr Ser Thr Arg Asn Ala Ile Tyr Leu Gly Ser Ser Ala Lys Ile Thr
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aac tta agg gca gcc caa ggc caa tct atc tat ttc tat gat ccg att   1267
Asn Leu Arg Ala Ala Gln Gly Gln Ser Ile Tyr Phe Tyr Asp Pro Ile
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gat agc aac tcg cct tta gat tat tca gga acg att gta ttt tct ggg   1363
Asp Ser Asn Ser Pro Leu Asp Tyr Ser Gly Thr Ile Val Phe Ser Gly
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gaa aag ctc tct gca gat gaa gcg aaa gct gct gat aac ttc aca tct   1411
Glu Lys Leu Ser Ala Asp Glu Ala Lys Ala Ala Asp Asn Phe Thr Ser
            425                 430                 435

ata tta aag caa cca ttg gct cta gcc tct gga acc tta gca ctc aaa   1459
Ile Leu Lys Gln Pro Leu Ala Leu Ala Ser Gly Thr Leu Ala Leu Lys
        440                 445                 450

gga aat gtc gag tta gat gtc aat ggt ttc aca cag act gaa ggc tct   1507
Gly Asn Val Glu Leu Asp Val Asn Gly Phe Thr Gln Thr Glu Gly Ser
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aca ctc ctc atg caa cca gga aca aag ctc aaa gca gat act gaa gct   1555
Thr Leu Leu Met Gln Pro Gly Thr Lys Leu Lys Ala Asp Thr Glu Ala
470                 475                 480                 485

atc agt ctt acc aaa ctt gtc gtt gat ctt tct gcc tta gag gga aat   1603
Ile Ser Leu Thr Lys Leu Val Val Asp Leu Ser Ala Leu Glu Gly Asn
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aag agt gtg tcc att gaa aca gca gga gcc aac aaa act ata act cta   1651
Lys Ser Val Ser Ile Glu Thr Ala Gly Ala Asn Lys Thr Ile Thr Leu
            505                 510                 515

acc tct cct ctt gtt ttc caa gat agt agc ggc aat ttt tat gaa agc   1699
Thr Ser Pro Leu Val Phe Gln Asp Ser Ser Gly Asn Phe Tyr Glu Ser
        520                 525                 530

cat acg ata aac caa gcc ttc acg cag cct ttg gtg gta ttc act gct   1747
His Thr Ile Asn Gln Ala Phe Thr Gln Pro Leu Val Val Phe Thr Ala
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gct act gct gct agc gat att tat atc gat gcg ctt ctc act tct cca   1795
Ala Thr Ala Ala Ser Asp Ile Tyr Ile Asp Ala Leu Leu Thr Ser Pro
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gta caa act cca gaa cct cat tac ggg tat cag gga cat tgg gaa gcc   1843
Val Gln Thr Pro Glu Pro His Tyr Gly Tyr Gln Gly His Trp Glu Ala
                570                 575                 580

act tgg gca gac aca tca act gca aaa tca gga act atg act tgg gta   1891
Thr Trp Ala Asp Thr Ser Thr Ala Lys Ser Gly Thr Met Thr Trp Val
            585                 590                 595

act acg ggc tac aac cct aat cct gag cgt aga gct tcc gta gtt ccc   1939
Thr Thr Gly Tyr Asn Pro Asn Pro Glu Arg Arg Ala Ser Val Val Pro
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Asp Ser Leu Trp Ala Ser Phe Thr Asp Ile Arg Thr Leu Gln Gln Ile
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atg aca tct caa gcg aat agt atc tat cag caa cga gga ctc tgg gca   2035
Met Thr Ser Gln Ala Asn Ser Ile Tyr Gln Gln Arg Gly Leu Trp Ala
630                 635                 640                 645

tca gga act gcg aat ttc ttc cat aag gat aaa tca gga act aac caa   2083
Ser Gly Thr Ala Asn Phe Phe His Lys Asp Lys Ser Gly Thr Asn Gln
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Ala Phe Arg His Lys Ser Tyr Gly Tyr Ile Val Gly Gly Ser Ala Glu
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gat ttt tct gaa aat atc ttc agt gta gct ttc tgc cag ctc ttc ggt   2179
Asp Phe Ser Glu Asn Ile Phe Ser Val Ala Phe Cys Gln Leu Phe Gly
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aaa gat aaa gac ctg ttt ata gtt gaa aat acc tct cat aac tat tta   2227
Lys Asp Lys Asp Leu Phe Ile Val Glu Asn Thr Ser His Asn Tyr Leu
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gcg tcg cta tac ctg caa cat cga gca ttc cta gga gga ctt ccc atg   2275
Ala Ser Leu Tyr Leu Gln His Arg Ala Phe Leu Gly Gly Leu Pro Met
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ccc tca ttt gga agt atc acc gac atg ctg aaa gat att cct ctc att   2323
Pro Ser Phe Gly Ser Ile Thr Asp Met Leu Lys Asp Ile Pro Leu Ile
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Leu Asn Ala Gln Leu Ser Tyr Ser Tyr Thr Lys Asn Asp Met Asp Thr
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cgc tat act tcc tat cct gaa gct caa ggc tct tgg acc aat aac tct   2419
Arg Tyr Thr Ser Tyr Pro Glu Ala Gln Gly Ser Trp Thr Asn Asn Ser
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ggg gct cta gag ctc gga gga tct ctg gct cta tat ctc cct aaa gaa   2467
Gly Ala Leu Glu Leu Gly Gly Ser Leu Ala Leu Tyr Leu Pro Lys Glu
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gca ccg ttc ttc cag gga tat ttc ccc ttc tta aag ttc cag gca gtc   2515
Ala Pro Phe Phe Gln Gly Tyr Phe Pro Phe Leu Lys Phe Gln Ala Val
790                 795                 800                 805

tac agc cgc caa caa aac ttt aaa gag agt ggc gct gaa gcc cgt gct   2563
Tyr Ser Arg Gln Gln Asn Phe Lys Glu Ser Gly Ala Glu Ala Arg Ala
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ttt gat gat gga gac cta gtg aac tgc tct atc cct gtc ggc att cgg   2611
Phe Asp Asp Gly Asp Leu Val Asn Cys Ser Ile Pro Val Gly Ile Arg
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gcc tac att ggt gat gtg tat cgt aaa aat ccc cgt tcg cgt act tct   2707
Ala Tyr Ile Gly Asp Val Tyr Arg Lys Asn Pro Arg Ser Arg Thr Ser
    855                 860                 865

cta atg gtc agt gga gcc tct tgg act tcg cta tgt aaa aac ctc gca   2755
Leu Met Val Ser Gly Ala Ser Trp Thr Ser Leu Cys Lys Asn Leu Ala
870                 875                 880                 885

cga caa gcc ttc tta gca agt gct gga agc cat ctg act ctc tcc cct   2803
Arg Gln Ala Phe Leu Ala Ser Ala Gly Ser His Leu Thr Leu Ser Pro
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cat gta gaa ctc tct ggg gaa gct gct tat gag ctt cgt ggc tca gca   2851
His Val Glu Leu Ser Gly Glu Ala Ala Tyr Glu Leu Arg Gly Ser Ala
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His Ile Tyr Asn Val Asp Cys Gly Leu Arg Tyr Ser Phe
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Met Leu Ser Ser Leu
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atc cgt gat tca ttt ccc ctt ctt att tta ctt ccc aca ttc cta gcg 163
Ile Arg Asp Ser Phe Pro Leu Leu Ile Leu Leu Pro Thr Phe Leu Ala
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Ala Leu Gly Ala Ser Val Ala Gly Gly Val Met Gly Thr Tyr Ile Val
25 30 35

gta aaa cgt att gtt tca att agt gga agt ata tct cat gca att cta 259
Val Lys Arg Ile Val Ser Ile Ser Gly Ser Ile Ser His Ala Ile Leu
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Gly Gly Ile Gly Leu Thr Leu Trp Ile Gln Tyr Lys Leu His Leu Ser
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Phe Phe Pro Met Tyr Gly Ala Ile Val Gly Ala Ile Phe Leu Ala Leu
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tgc atc ggc aag atc cac ctg aaa tac caa gaa agg gaa gac tct ttg   403
Cys Ile Gly Lys Ile His Leu Lys Tyr Gln Glu Arg Glu Asp Ser Leu
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Ile Ala Met Ile Trp Ser Val Gly Met Ala Ile Gly Ile Ile Phe Ile
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tcc agg ctt ccc acc ttt aat gga gag ctc atc aat ttt cta ttt ggg   499
Ser Arg Leu Pro Thr Phe Asn Gly Glu Leu Ile Asn Phe Leu Phe Gly
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aac att ctc tgg gtc acc cct tca gac ctc tat agc tta gga atc ttt   547
Asn Ile Leu Trp Val Thr Pro Ser Asp Leu Tyr Ser Leu Gly Ile Phe
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gat ctt ctt gtt tta gga att gtg gtc ctt tgc cac acc cgg ttc ctt   595
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gct ctt tgc ttt gat gag agg tac acg gct tta aac cat tgt tct gta   643
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cag ctg tgg tat ttc cta ctt ctt gtt ctg aca gca atc acg att gtg   691
Gln Leu Trp Tyr Phe Leu Leu Leu Val Leu Thr Ala Ile Thr Ile Val
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tgc atc gcc tac tgt tta gat ttc cca gta ggt cct acg ata tca ttg   883
Cys Ile Ala Tyr Cys Leu Asp Phe Pro Val Gly Pro Thr Ile Ser Leu
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ctg atg ggg tta ggt tat aca gcg agt ctt tgt gtg aag aag cgg tac   931
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Asn Pro Ser Thr Pro Ser Pro Val Ser Pro Glu Ile Asn Thr Asn Val
        280                 285                 290

tagctaggga agcgcttttg gaagctttgg aggcattctt cctgttcgtc aggaagaaga 1039
tcatcaattt tatttaaagc taccagcata tctttctttt caaaatctgg ctgatgagag 1099
t                                                                 1100
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<210> 10
<211> 880
<212> DNA
<213> Chlamydiapneumoniae

<220>
<221> CDS
<222> (1)..(880)

<400> 10

```
atgctctcct cactaatccg tgattcattt ccccttctta ttttacttcc cacattccta    60
gcggcattag gagcctccgt agctggcggc gttatgggaa cctatatcgt tgtaaaacgt   120
attgtttcaa ttagtggaag tatatctcat gcaattctag gaggaattgg cctcacccta   180
tggatacaat ataagcttca tctctctttt ttccctatgt atggagctat tgtaggagct   240
atttttctag ctctttgcat cggcaagatc cacctgaaat accaagaaag ggaagactct   300
ttgattgcga tgatttggtc tgtgggcatg gcaattggaa ttatattcat ttccaggctt   360
cccaccttta atggagagct catcaatttt ctatttggga acattctctg ggtcacccct   420
tcagacctct atagcttagg aatctttgat cttcttgttt taggaattgt ggtcctttgc   480
cacacccggt tccttgctct ttgctttgat gagaggtaca cggctttaaa ccattgttct   540
gtacagctgt ggtatttcct acttcttgtt ctgacagcaa tcacgattgt gatgttgatt   600
tatgtgatgg gaacgattct gatgcttagc atgctcgtct tacctgttgc tatagcgtgt   660
agattttcgt acaagatgac acgaattatg ttcatctcgg tcctcttgaa tatcttatgt   720
tctttttctg gaatttgcat cgcctactgt ttagatttcc cagtaggtcc tacgatatca   780
ttgctgatgg ggttaggtta tacagcgagt ctttgtgtag aagaagcggt acaatccgtc   840
gacgccttct cctgtaagtc ctgaaatcaa tacaaatgta                        880
```

<210> 11
<211> 928
<212> PRT
<213> Chlamydia pneumoniae

<400> 11

```
Met Lys Thr Ser Ile Pro Trp Val Leu Val Ser Ser Val Leu Ala Phe
  1               5                  10                  15

Ser Cys His Leu Gln Ser Leu Ala Asn Glu Glu Leu Leu Ser Pro Asp
             20                  25                  30

Asp Ser Phe Asn Gly Asn Ile Asp Ser Gly Thr Phe Thr Pro Lys Thr
         35                  40                  45

Ser Ala Thr Thr Tyr Ser Leu Thr Gly Asp Val Phe Phe Tyr Glu Pro
     50                  55                  60

Gly Lys Gly Thr Pro Leu Ser Asp Ser Cys Phe Lys Gln Thr Thr Asp
 65                  70                  75                  80
```

```
Asn Leu Thr Phe Leu Gly Asn Gly His Ser Leu Thr Phe Gly Phe Ile
                 85                  90                  95

Asp Ala Gly Thr His Ala Gly Ala Ala Ala Ser Thr Thr Ala Asn Lys
            100                 105                 110

Asn Leu Thr Phe Ser Gly Phe Ser Leu Leu Ser Phe Asp Ser Ser Pro
        115                 120                 125

Ser Thr Thr Val Thr Thr Gly Gln Gly Thr Leu Ser Ser Ala Gly Gly
    130                 135                 140

Val Asn Leu Glu Asn Ile Arg Lys Leu Val Val Ala Gly Asn Phe Ser
145                 150                 155                 160

Thr Ala Asp Gly Gly Ala Ile Lys Gly Ala Ser Phe Leu Leu Thr Gly
                165                 170                 175

Thr Ser Gly Asp Ala Leu Phe Ser Asn Asn Ser Ser Ser Thr Lys Gly
            180                 185                 190

Gly Ala Ile Ala Thr Thr Ala Gly Ala Arg Ile Ala Asn Asn Thr Gly
        195                 200                 205

Tyr Val Arg Phe Leu Ser Asn Ile Ala Ser Thr Ser Gly Gly Ala Ile
    210                 215                 220

Asp Asp Glu Gly Thr Ser Ile Leu Ser Asn Asn Lys Phe Leu Tyr Phe
225                 230                 235                 240

Glu Gly Asn Ala Ala Lys Thr Thr Gly Gly Ala Ile Cys Asn Thr Lys
                245                 250                 255

Ala Ser Gly Ser Pro Glu Leu Ile Ile Ser Asn Asn Lys Thr Leu Ile
            260                 265                 270

Phe Ala Ser Asn Val Ala Glu Thr Ser Gly Gly Ala Ile His Ala Lys
        275                 280                 285

Lys Leu Ala Leu Ser Ser Gly Gly Phe Thr Glu Phe Leu Arg Asn Asn
    290                 295                 300

Val Ser Ser Ala Thr Pro Lys Gly Gly Ala Ile Ser Ile Asp Ala Ser
305                 310                 315                 320

Gly Glu Leu Ser Leu Ser Ala Glu Thr Gly Asn Ile Thr Phe Val Arg
                325                 330                 335

Asn Thr Leu Thr Thr Thr Gly Ser Thr Asp Thr Pro Lys Arg Asn Ala
            340                 345                 350

Ile Asn Ile Gly Ser Asn Gly Lys Phe Thr Glu Leu Arg Ala Ala Lys
        355                 360                 365

Asn His Thr Ile Phe Phe Tyr Asp Pro Ile Thr Ser Glu Gly Thr Ser
    370                 375                 380
```

```
Ser Asp Val Leu Lys Ile Asn Asn Gly Ser Ala Gly Ala Leu Asn Pro
385                 390                 395                 400

Tyr Gln Gly Thr Ile Leu Phe Ser Gly Glu Thr Leu Thr Ala Asp Glu
                405                 410                 415

Leu Lys Val Ala Asp Asn Leu Lys Ser Ser Phe Thr Gln Pro Val Ser
            420                 425                 430

Leu Ser Gly Gly Lys Leu Leu Leu Gln Lys Gly Val Thr Leu Glu Ser
        435                 440                 445

Thr Ser Phe Ser Gln Glu Ala Gly Ser Leu Leu Gly Met Asp Ser Gly
    450                 455                 460

Thr Thr Leu Ser Thr Thr Ala Gly Ser Ile Thr Ile Thr Asn Leu Gly
465                 470                 475                 480

Ile Asn Val Asp Ser Leu Gly Leu Lys Gln Pro Val Ser Leu Thr Ala
                485                 490                 495

Lys Gly Ala Ser Asn Lys Val Ile Val Ser Gly Lys Leu Asn Leu Ile
            500                 505                 510

Asp Ile Glu Gly Asn Ile Tyr Glu Ser His Met Phe Ser His Asp Gln
        515                 520                 525

Leu Phe Ser Leu Leu Lys Ile Thr Val Asp Ala Asp Val Asp Thr Asn
    530                 535                 540

Val Asp Ile Ser Ser Leu Ile Pro Val Pro Ala Glu Asp Pro Asn Ser
545                 550                 555                 560

Glu Tyr Gly Phe Gln Gly Gln Trp Asn Val Asn Trp Thr Thr Asp Thr
                565                 570                 575

Ala Thr Asn Thr Lys Glu Ala Thr Ala Thr Trp Thr Lys Thr Gly Phe
            580                 585                 590

Val Pro Ser Pro Glu Arg Lys Ser Ala Leu Val Cys Asn Thr Leu Trp
        595                 600                 605

Gly Val Phe Thr Asp Ile Arg Ser Leu Gln Gln Leu Val Glu Ile Gly
    610                 615                 620

Ala Thr Gly Met Glu His Lys Gln Gly Phe Trp Val Ser Ser Met Thr
625                 630                 635                 640

Asn Phe Leu His Lys Thr Gly Asp Glu Asn Arg Lys Gly Phe Arg His
                645                 650                 655

Thr Ser Gly Gly Tyr Val Ile Gly Gly Ser Ala His Thr Pro Lys Asp
            660                 665                 670

Asp Leu Phe Thr Phe Ala Phe Cys His Leu Phe Ala Arg Asp Lys Asp
        675                 680                 685
```

Cys Phe Ile Ala His Asn Asn Ser Arg Thr Tyr Gly Gly Thr Leu Phe
690 695 700

Phe Lys His Ser His Thr Leu Gln Pro Gln Asn Tyr Leu Arg Leu Gly
705 710 715 720

Arg Ala Lys Phe Ser Glu Ser Ala Ile Glu Lys Phe Pro Arg Glu Ile
725 730 735

Pro Leu Ala Leu Asp Val Gln Val Ser Phe Ser His Ser Asp Asn Arg
740 745 750

Met Glu Thr His Tyr Thr Ser Leu Pro Glu Ser Glu Gly Ser Trp Ser
755 760 765

Asn Glu Cys Ile Ala Gly Gly Ile Gly Leu Asp Leu Pro Phe Val Leu
770 775 780

Ser Asn Pro His Pro Leu Phe Lys Thr Phe Ile Pro Gln Met Lys Val
785 790 795 800

Glu Met Val Tyr Val Ser Gln Asn Ser Phe Phe Glu Ser Ser Ser Asp
805 810 815

Gly Arg Gly Phe Ser Ile Gly Arg Leu Leu Asn Leu Ser Ile Pro Val
820 825 830

Gly Ala Lys Phe Val Gln Gly Asp Ile Gly Asp Ser Tyr Thr Tyr Asp
835 840 845

Leu Ser Gly Phe Phe Val Ser Asp Val Tyr Arg Asn Asn Pro Gln Ser
850 855 860

Thr Ala Thr Leu Val Met Ser Pro Asp Ser Trp Lys Ile Arg Gly Gly
865 870 875 880

Asn Leu Ser Arg Gln Ala Phe Leu Leu Arg Gly Ser Asn Asn Tyr Val
885 890 895

Tyr Asn Ser Asn Cys Glu Leu Phe Gly His Tyr Ala Met Glu Leu Arg
900 905 910

Gly Ser Ser Arg Asn Tyr Asn Val Asp Val Gly Thr Lys Leu Arg Phe
915 920 925

<210> 12
<211> 928
<212> PRT
<213> Chlamydia pneumoniae

<400> 12

Met Lys Ser Gln Phe
1 5

Ser Trp Leu Val Leu Ser Ser Thr Leu Ala Cys Phe Thr Ser Cys Ser
10 15 20

Thr Val Phe Ala Ala Thr Ala Glu Asn Ile Gly Pro Ser Asp Ser Phe
25 30 35

Asp Gly Ser Thr Asn Thr Gly Thr Tyr Thr Pro Lys Asn Thr Thr Thr
40 45 50

Gly Ile Asp Tyr Thr Leu Thr Gly Asp Ile Thr Leu Gln Asn Leu Gly
55 60 65

Asp Ser Ala Ala Leu Thr Lys Gly Cys Phe Ser Asp Thr Thr Glu Ser
70 75 80 85

Leu Ser Phe Ala Gly Lys Gly Tyr Ser Leu Ser Phe Leu Asn Ile Lys
90 95 100

Ser Ser Ala Glu Gly Ala Ala Leu Ser Val Thr Thr Asp Lys Asn Leu
105 110 115

Ser Leu Thr Gly Phe Ser Ser Leu Thr Phe Leu Ala Ala Pro Ser Ser
120 125 130

Val Ile Thr Thr Pro Ser Gly Lys Gly Ala Val Lys Cys Gly Gly Asp
135 140 145

Leu Thr Phe Asp Asn Asn Gly Thr Ile Leu Phe Lys Gln Asp Tyr Cys
150 155 160 165

Glu Glu Asn Gly Gly Ala Ile Ser Thr Lys Asn Leu Ser Leu Lys Asn
170 175 180

Ser Thr Gly Ser Ile Ser Phe Glu Gly Asn Lys Ser Ser Ala Thr Gly
185 190 195

Lys Lys Gly Gly Ala Ile Cys Ala Thr Gly Thr Val Asp Ile Thr Asn
200 205 210

Asn Thr Ala Pro Thr Leu Phe Ser Asn Asn Ile Ala Glu Ala Ala Gly
215 220 225

Gly Ala Ile Asn Ser Thr Gly Asn Cys Thr Ile Thr Gly Asn Thr Ser
230 235 240 245

Leu Val Phe Ser Glu Asn Ser Val Thr Ala Thr Ala Gly Asn Gly Gly
250 255 260

Ala Leu Ser Gly Asp Ala Asp Val Thr Ile Ser Gly Asn Gln Ser Val
265 270 275

Thr Phe Ser Gly Asn Gln Ala Val Ala Asn Gly Gly Ala Ile Tyr Ala
280 285 290

Lys Lys Leu Thr Leu Ala Ser Gly Gly Gly Gly Gly Asn Pro Phe Ser
295 300 305

Asn Asn Ile Val Gln Gly Thr Thr Ala Gly Asn Gly Gly Ala Ile Ser
310 315 320 325

```
Ile Leu Ala Ala Gly Glu Cys Ser Leu Phe Ser Glu Ala Gly Asp His
                330                 335                 340

Tyr Leu Asn Gly Asn Ala Ile Val Ala Thr Thr Pro Gln Thr Thr Lys
            345                 350                 355

Arg Asn Ser Ile Asp Ile Gly Ser Thr Gly Lys Asp His Glu Leu Arg
        360                 365                 370

Ala Ile Ser Gly His Ser Ile Phe Phe Tyr Asp Pro Ile Thr Ala Asn
    375                 380                 385

Thr Ala Ala Asp Ser Thr Asp Thr Leu Asn Leu Asn Lys Ala Asp Ala
390                 395                 400                 405

Gly Asn Ser Thr Asp Tyr Ser Gly Ser Ile Val Phe Ser Gly Glu Lys
                410                 415                 420

Leu Ser Glu Asp Glu Ala Lys Val Ala Asp Asn Leu Thr Ser Thr Leu
            425                 430                 435

Lys Gln Pro Val Thr Leu Thr Ala Gly Asn Leu Val Leu Lys Arg Gly
        440                 445                 450

Val Thr Leu Asp Thr Lys Gly Phe Thr Gln Thr Ala Gly Ser Ser Val
    455                 460                 465

Ile Met Asp Ala Gly Thr Thr Leu Lys Ala Ser Thr Glu Glu Val Thr
470                 475                 480                 485

Leu Thr Gly Leu Ser Ile Pro Val Asp Ser Leu Gly Glu Gly Lys Lys
                490                 495                 500

Val Val Ile Ala Ala Ser Ala Ala Ser Lys Asn Val Ala Leu Ser Gly
            505                 510                 515

Pro Ile Leu Leu Leu Asp Asn Gln Gly Asn Ala Tyr Glu Asn His Asp
        520                 525                 530

Leu Gly Lys Thr Gln Asp Phe Ser Phe Val Gln Leu Ser Ala Leu Gly
    535                 540                 545

Thr Ala Thr Thr Thr Asp Val Pro Ala Val Pro Thr Val Ala Thr Pro
550                 555                 560                 565

Thr His Tyr Gly Tyr Gln Gly Thr Trp Gly Met Thr Trp Val Asp Asp
                570                 575                 580

Thr Ala Ser Thr Pro Lys Thr Lys Thr Ala Thr Leu Ala Trp Thr Asn
            585                 590                 595

Thr Gly Tyr Leu Pro Asn Pro Glu Arg Gln Gly Pro Leu Val Pro Asn
        600                 605                 610

Ser Leu Trp Gly Ser Phe Ser Asp Ile Gln Ala Ile Gln Gly Val Ile
    615                 620                 625
```

```
Glu Arg Ser Ala Leu Thr Leu Cys Ser Asp Arg Gly Phe Trp Ala Ala
630                 635                 640                 645

Gly Val Ala Asn Phe Leu Asp Lys Asp Lys Lys Gly Glu Lys Arg Lys
                650                 655                 660

Tyr Arg His Lys Ser Gly Gly Tyr Ala Ile Gly Gly Ala Ala Gln Thr
            665                 670                 675

Cys Ser Glu Asn Leu Ile Ser Phe Ala Phe Cys Gln Leu Phe Gly Ser
        680                 685                 690

Asp Lys Asp Phe Leu Val Ala Lys Asn His Thr Asp Thr Tyr Ala Gly
    695                 700                 705

Ala Phe Tyr Ile Gln His Ile Thr Glu Cys Ser Gly Phe Ile Gly Cys
710                 715                 720                 725

Leu Leu Asp Lys Leu Pro Gly Ser Trp Ser His Lys Pro Leu Val Leu
                730                 735                 740

Glu Gly Gln Leu Ala Tyr Ser His Val Ser Asn Asp Leu Lys Thr Lys
            745                 750                 755

Tyr Thr Ala Tyr Pro Glu Val Lys Gly Ser Trp Gly Asn Asn Ala Phe
        760                 765                 770

Asn Met Met Leu Gly Ala Ser Ser His Ser Tyr Pro Glu Tyr Leu His
    775                 780                 785

Cys Phe Asp Thr Tyr Ala Pro Tyr Ile Lys Leu Asn Leu Thr Tyr Ile
790                 795                 800                 805

Arg Gln Asp Ser Phe Ser Glu Lys Gly Thr Glu Gly Arg Ser Phe Asp
                810                 815                 820

Asp Ser Asn Leu Phe Asn Leu Ser Leu Pro Ile Gly Val Lys Phe Glu
            825                 830                 835

Lys Phe Ser Asp Cys Asn Asp Phe Ser Tyr Asp Leu Thr Leu Ser Tyr
        840                 845                 850

Val Pro Asp Leu Ile Arg Asn Asp Pro Lys Cys Thr Thr Ala Leu Val
    855                 860                 865

Ile Ser Gly Ala Ser Trp Glu Thr Tyr Ala Asn Asn Leu Ala Arg Gln
870                 875                 880                 885

Ala Leu Gln Val Arg Ala Gly Ser His Tyr Ala Phe Ser Pro Met Phe
                890                 895                 900

Glu Val Leu Gly Gln Phe Val Phe Glu Val Arg Gly Ser Ser Arg Ile
            905                 910                 915

Tyr Asn Val Asp Leu Gly Gly Lys Phe Gln Phe
        920                 925
```

<210> 13
<211> 885
<212> PRT
<213> Chlamydia pneumoniae

<400> 13

```
Gly Thr Tyr Thr Pro Lys Asn Thr Thr Thr Gly Ile Asp Tyr Thr Leu
  1               5                  10                  15

Thr Gly Asp Ile Thr Leu Gln Asn Leu Gly Asp Ser Ala Ala Leu Thr
            20                  25                  30

Lys Gly Cys Phe Ser Asp Thr Thr Glu Ser Leu Ser Phe Ala Gly Lys
        35                  40                  45

Gly Tyr Ser Leu Ser Phe Leu Asn Ile Lys Ser Ser Ala Glu Gly Ala
    50                  55                  60

Ala Leu Ser Val Thr Thr Asp Lys Asn Leu Ser Leu Thr Gly Phe Ser
65                  70                  75                  80

Ser Leu Thr Phe Leu Ala Ala Pro Ser Ser Val Ile Thr Thr Pro Ser
                85                  90                  95

Gly Lys Gly Ala Val Lys Cys Gly Gly Asp Leu Thr Phe Asp Asn Asn
            100                 105                 110

Gly Thr Ile Leu Phe Lys Gln Asp Tyr Cys Glu Glu Asn Gly Gly Ala
        115                 120                 125

Ile Ser Thr Lys Asn Leu Ser Leu Lys Asn Ser Thr Gly Ser Ile Ser
    130                 135                 140

Phe Glu Gly Asn Lys Ser Ser Ala Thr Gly Lys Lys Gly Gly Ala Ile
145                 150                 155                 160

Cys Ala Thr Gly Thr Val Asp Ile Thr Asn Asn Thr Ala Pro Thr Leu
                165                 170                 175

Phe Ser Asn Asn Ile Ala Glu Ala Ala Gly Gly Ala Ile Asn Ser Thr
            180                 185                 190

Gly Asn Cys Thr Ile Thr Gly Asn Thr Ser Leu Val Phe Ser Glu Asn
        195                 200                 205

Ser Val Thr Ala Thr Ala Gly Asn Gly Gly Ala Leu Ser Gly Asp Ala
    210                 215                 220

Asp Val Thr Ile Ser Gly Asn Gln Ser Val Thr Phe Ser Gly Asn Gln
225                 230                 235                 240

Ala Val Ala Asn Gly Gly Ala Ile Tyr Ala Lys Lys Leu Thr Leu Ala
                245                 250                 255

Ser Gly Gly Gly Gly Gly Asn Pro Phe Ser Asn Asn Ile Val Gln Gly
            260                 265                 270
```

```
Thr Thr Ala Gly Asn Gly Gly Ala Ile Ser Ile Leu Ala Ala Gly Glu
        275                 280                 285

Cys Ser Leu Phe Ser Glu Ala Gly Asp His Tyr Leu Asn Gly Asn Ala
    290                 295                 300

Ile Val Ala Thr Thr Pro Gln Thr Thr Lys Arg Asn Ser Ile Asp Ile
305                 310                 315                 320

Gly Ser Thr Gly Lys Asp His Glu Leu Arg Ala Ile Ser Gly His Ser
                325                 330                 335

Ile Phe Phe Tyr Asp Pro Ile Thr Ala Asn Thr Ala Ala Asp Ser Thr
            340                 345                 350

Asp Thr Leu Asn Leu Asn Lys Ala Asp Ala Gly Asn Ser Thr Asp Tyr
        355                 360                 365

Ser Gly Ser Ile Val Phe Ser Gly Glu Lys Leu Ser Glu Asp Glu Ala
    370                 375                 380

Lys Val Ala Asp Asn Leu Thr Ser Thr Leu Lys Gln Pro Val Thr Leu
385                 390                 395                 400

Thr Ala Gly Asn Leu Val Leu Lys Arg Gly Val Thr Leu Asp Thr Lys
                405                 410                 415

Gly Phe Thr Gln Thr Ala Gly Ser Ser Val Ile Met Asp Ala Gly Thr
            420                 425                 430

Thr Leu Lys Ala Ser Thr Glu Glu Val Thr Leu Thr Gly Leu Ser Ile
        435                 440                 445

Pro Val Asp Ser Leu Gly Glu Gly Lys Lys Val Val Ile Ala Ala Ser
    450                 455                 460

Ala Ala Ser Lys Asn Val Ala Leu Ser Gly Pro Ile Leu Leu Leu Asp
465                 470                 475                 480

Asn Gln Gly Asn Ala Tyr Glu Asn His Asp Leu Gly Lys Thr Gln Asp
                485                 490                 495

Phe Ser Phe Val Gln Leu Ser Ala Leu Gly Thr Ala Thr Thr Thr Asp
            500                 505                 510

Val Pro Ala Val Pro Thr Val Ala Thr Pro Thr His Tyr Gly Tyr Gln
        515                 520                 525

Gly Thr Trp Gly Met Thr Trp Val Asp Asp Thr Ala Ser Thr Pro Lys
    530                 535                 540

Thr Lys Thr Ala Thr Leu Ala Trp Thr Asn Thr Gly Tyr Leu Pro Asn
545                 550                 555                 560

Pro Glu Arg Gln Gly Pro Leu Val Pro Asn Ser Leu Trp Gly Ser Phe
                565                 570                 575
```

```
Ser Asp Ile Gln Ala Ile Gln Gly Val Ile Glu Arg Ser Ala Leu Thr
            580                 585                 590

Leu Cys Ser Asp Arg Gly Phe Trp Ala Ala Gly Val Ala Asn Phe Leu
        595                 600                 605

Asp Lys Asp Lys Lys Gly Glu Lys Arg Lys Tyr Arg His Lys Ser Gly
    610                 615                 620

Gly Tyr Ala Ile Gly Gly Ala Ala Gln Thr Cys Ser Glu Asn Leu Ile
625                 630                 635                 640

Ser Phe Ala Phe Cys Gln Leu Phe Gly Ser Asp Lys Asp Phe Leu Val
                645                 650                 655

Ala Lys Asn His Thr Asp Thr Tyr Ala Gly Ala Phe Tyr Ile Gln His
            660                 665                 670

Ile Thr Glu Cys Ser Gly Phe Ile Gly Cys Leu Leu Asp Lys Leu Pro
        675                 680                 685

Gly Ser Trp Ser His Lys Pro Leu Val Leu Glu Gly Gln Leu Ala Tyr
    690                 695                 700

Ser His Val Ser Asn Asp Leu Lys Thr Lys Tyr Thr Ala Tyr Pro Glu
705                 710                 715                 720

Val Lys Gly Ser Trp Gly Asn Asn Ala Phe Asn Met Met Leu Gly Ala
                725                 730                 735

Ser Ser His Ser Tyr Pro Glu Tyr Leu His Cys Phe Asp Thr Tyr Ala
            740                 745                 750

Pro Tyr Ile Lys Leu Asn Leu Thr Tyr Ile Arg Gln Asp Ser Phe Ser
        755                 760                 765

Glu Lys Gly Thr Glu Gly Arg Ser Phe Asp Asp Ser Asn Leu Phe Asn
    770                 775                 780

Leu Ser Leu Pro Ile Gly Val Lys Phe Glu Lys Phe Ser Asp Cys Asn
785                 790                 795                 800

Asp Phe Ser Tyr Asp Leu Thr Leu Ser Tyr Val Pro Asp Leu Ile Arg
                805                 810                 815

Asn Asp Pro Lys Cys Thr Thr Ala Leu Val Ile Ser Gly Ala Ser Trp
            820                 825                 830

Glu Thr Tyr Ala Asn Asn Leu Ala Arg Gln Ala Leu Gln Val Arg Ala
        835                 840                 845

Gly Ser His Tyr Ala Phe Ser Pro Met Phe Glu Val Leu Gly Gln Phe
    850                 855                 860

Val Phe Glu Val Arg Gly Ser Ser Arg Ile Tyr Asn Val Asp Leu Gly
865                 870                 875                 880
```

Gly Lys Phe Gln Phe
885

<210> 14
<211> 928
<212> PRT
<213> Chlamydia pneumoniae

<400> 14
Met Lys Ser Ser Leu His Trp Phe Leu Ile Ser Ser Ser Leu Ala Leu
1 5 10 15

Pro Leu Ser Leu Asn Phe Ser Ala Phe Ala Ala Val Val Glu Ile Asn
20 25 30
Leu Gly Pro Thr Asn Ser Phe Ser Gly Pro Gly Thr Tyr Thr Pro Pro
35 40 45

Ala Gln Thr Thr Asn Ala Asp Gly Thr Ile Tyr Asn Leu Thr Gly Asp
50 55 60

Val Ser Ile Thr Asn Ala Gly Ser Pro Thr Ala Leu Thr Ala Ser Cys
65 70 75 80

Phe Lys Glu Thr Thr Gly Asn Leu Ser Phe Gln Gly His Gly Tyr Gln
85 90 95

Phe Leu Leu Gln Asn Ile Asp Ala Gly Ala Asn Cys Thr Phe Thr Asn
100 105 110

Thr Ala Ala Asn Lys Leu Leu Ser Phe Ser Gly Phe Ser Tyr Leu Ser
115 120 125

Leu Ile Gln Thr Thr Asn Ala Thr Thr Gly Thr Gly Ala Ile Lys Ser
130 135 140

Thr Gly Ala Cys Ser Ile Gln Ser Asn Tyr Ser Cys Tyr Phe Gly Gln
145 150 155 160

Asn Phe Ser Asn Asp Asn Gly Gly Ala Leu Gln Gly Ser Ser Ile Ser
165 170 175

Leu Ser Leu Asn Pro Asn Leu Thr Phe Ala Lys Asn Lys Ala Thr Gln
180 185 190

Lys Gly Gly Ala Leu Tyr Ser Thr Gly Gly Ile Thr Ile Asn Asn Thr
195 200 205

Leu Asn Ser Ala Ser Phe Ser Glu Asn Thr Ala Ala Asn Asn Gly Gly
210 215 220

Ala Ile Tyr Thr Glu Ala Ser Ser Phe Ile Ser Ser Asn Lys Ala Ile
225 230 235 240

Ser Phe Ile Asn Asn Ser Val Thr Ala Thr Ser Ala Thr Gly Gly Ala
245 250 255

Ile Tyr Cys Ser Ser Thr Ser Ala Pro Lys Pro Val Leu Thr Leu Ser
260 265 270

Asp Asn Gly Glu Leu Asn Phe Ile Gly Asn Thr Ala Ile Thr Ser Gly
275 280 285

Gly Ala Ile Tyr Thr Asp Asn Leu Val Leu Ser Ser Gly Gly Pro Thr
290 295 300

Leu Phe Lys Asn Asn Ser Gly Tyr Asp Thr Ala Ala Pro Leu Gly Gly
305 310 315 320

Ala Ile Ala Ile Ala Asp Ser Gly Ser Leu Ser Leu Ser Ala Leu Gly
325 330 335

Gly Asp Ile Thr Phe Glu Gly Asn Thr Val Val Lys Gly Ala Ser Ser
340 345 350

Ser Gln Thr Thr Thr Arg Asn Ser Ile Asn Ile Gly Asn Thr Asn Ala
355 360 365

Lys Ile Val Gln Leu Arg Ala Ser Gln Gly Asn Thr Ile Tyr Phe Tyr
370 375 380

Asp Pro Ile Thr Thr Ser Ile Thr Ala Ala Leu Ser Asp Ala Leu Asn
385 390 395 400

Leu Asn Gly Pro Asp Leu Ala Gly Asn Pro Ala Tyr Gln Gly Thr Ile
405 410 415

Val Phe Ser Gly Glu Lys Leu Ser Glu Ala Glu Ala Ala Glu Ala Asp
420 425 430

Asn Leu Lys Ser Thr Ile Gln Gln Pro Leu Thr Leu Ala Gly Gly Gln
435 440 445

Leu Ser Leu Lys Ser Gly Val Thr Leu Val Ala Lys Ser Phe Ser Gln
450 455 460

Ser Pro Gly Ser Thr Leu Leu Met Asp Ala Gly Thr Thr Leu Glu Thr
465 470 475 480

Ala Asp Gly Ile Thr Ile Asn Asn Leu Val Leu Asn Val Asp Ser Leu
485 490 495

Lys Glu Thr Lys Lys Gly Thr Leu Lys Ala Thr Gln Ala Ser Gln Thr
500 505 510

Val Thr Leu Ser Gly Ser Leu Ser Leu Val Asp Pro Ser Gly Asn Val
515 520 525

Tyr Glu Asp Val Ser Trp Asn Asn Pro Gln Val Phe Ser Cys Leu Thr
530 535 540

Leu Thr Ala Asp Asp Pro Ala Asn Ile His Ile Thr Asp Leu Ala Ala
545 550 555 560

```
Asp Pro Leu Glu Lys Asn Pro Ile His Trp Gly Tyr Gln Gly Asn Trp
                565                 570                 575

Ala Leu Ser Trp Gln Glu Asp Thr Ala Thr Lys Ser Lys Ala Ala Thr
            580                 585                 590

Leu Thr Trp Thr Lys Thr Gly Tyr Asn Pro Asn Pro Glu Arg Arg Gly
        595                 600                 605

Thr Leu Val Ala Asn Thr Leu Trp Gly Ser Phe Val Asp Val Arg Ser
    610                 615                 620

Ile Gln Gln Leu Val Ala Thr Lys Val Arg Gln Ser Gln Glu Thr Arg
625                 630                 635                 640

Gly Ile Trp Cys Glu Gly Ile Ser Asn Phe Phe His Lys Asp Ser Thr
                645                 650                 655

Lys Ile Asn Lys Gly Phe Arg His Ile Ser Ala Gly Tyr Val Val Gly
            660                 665                 670

Ala Thr Thr Thr Leu Ala Ser Asp Asn Leu Ile Thr Ala Ala Phe Cys
        675                 680                 685

Gln Leu Phe Gly Lys Asp Arg Asp His Phe Ile Asn Lys Asn Arg Ala
    690                 695                 700

Ser Ala Tyr Ala Ala Ser Leu His Leu Gln His Leu Ala Thr Leu Ser
705                 710                 715                 720

Ser Pro Ser Leu Leu Arg Tyr Leu Pro Gly Ser Glu Ser Glu Gln Pro
                725                 730                 735

Val Leu Phe Asp Ala Gln Ile Ser Tyr Ile Tyr Ser Lys Asn Thr Met
            740                 745                 750

Lys Thr Tyr Tyr Thr Gln Ala Pro Lys Gly Glu Ser Ser Trp Tyr Asn
        755                 760                 765

Asp Gly Cys Ala Leu Glu Leu Ala Ser Ser Leu Pro His Thr Ala Leu
    770                 775                 780

Ser His Glu Gly Leu Phe His Ala Tyr Phe Pro Phe Ile Lys Val Glu
785                 790                 795                 800

Ala Ser Tyr Ile His Gln Asp Ser Phe Lys Glu Arg Asn Thr Thr Leu
                805                 810                 815

Val Arg Ser Phe Asp Ser Gly Asp Leu Ile Asn Val Ser Val Pro Ile
            820                 825                 830

Gly Ile Thr Phe Glu Arg Phe Ser Arg Asn Glu Arg Ala Ser Tyr Glu
        835                 840                 845

Ala Thr Val Ile Tyr Val Ala Asp Val Tyr Arg Lys Asn Pro Asp Cys
    850                 855                 860
```

```
Thr Thr Ala Leu Leu Ile Asn Asn Thr Ser Trp Lys Thr Thr Gly Thr
865                 870                 875                 880

Asn Leu Ser Arg Gln Ala Gly Ile Gly Arg Ala Gly Ile Phe Tyr Ala
                885                 890                 895

Phe Ser Pro Asn Leu Glu Val Thr Ser Asn Leu Ser Met Glu Ile Arg
            900                 905                 910

Gly Ser Ser Arg Ser Tyr Asn Ala Asp Leu Gly Gly Lys Phe Gln Phe
        915                 920                 925
```

<210> 15
<211> 930
<212> PRT
<213> Chlamydia pneumoniae

<400> 15

```
Met Lys Ile Pro Leu His Lys Leu Leu Ile Ser Ser Thr Leu Val Thr
  1               5                  10                  15

Pro Ile Leu Leu Ser Ile Ala Thr Tyr Gly Ala Asp Ala Ser Leu Ser
            20                  25                  30

Pro Thr Asp Ser Phe Asp Gly Ala Gly Gly Ser Thr Phe Thr Pro Lys
        35                  40                  45

Ser Thr Ala Asp Ala Asn Gly Thr Asn Tyr Val Leu Ser Gly Asn Val
    50                  55                  60

Tyr Ile Asn Asp Ala Gly Lys Gly Thr Ala Leu Thr Gly Cys Cys Phe
65                  70                  75                  80

Thr Glu Thr Thr Gly Asp Leu Thr Phe Thr Gly Lys Gly Tyr Ser Phe
                85                  90                  95

Ser Phe Asn Thr Val Asp Ala Gly Ser Asn Ala Gly Ala Ala Ala Ser
            100                 105                 110

Thr Thr Ala Asp Lys Ala Leu Ile Phe Thr Gly Phe Ser Asn Leu Ser
        115                 120                 125

Phe Ile Ala Ala Pro Gly Thr Thr Val Ala Ser Gly Lys Ser Thr Leu
    130                 135                 140

Ser Ser Ala Gly Ala Leu Asn Leu Thr Asp Asn Gly Thr Ile Leu Phe
145                 150                 155                 160

Ser Gln Asn Val Ser Asn Glu Ala Asn Asn Asn Gly Gly Ala Ile Thr
                165                 170                 175

Thr Lys Thr Leu Ser Ile Ser Gly Asn Thr Ser Ser Ile Thr Phe Thr
            180                 185                 190

Ser Asn Ser Ala Lys Lys Leu Gly Gly Ala Ile Tyr Ser Ser Ala Ala
        195                 200                 205
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Ala Ser Ile Ser Gly Asn Thr Gly Gln Leu Val Phe Met Asn Asn Lys
    210                 215                 220

Gly Glu Thr Gly Gly Gly Ala Leu Gly Phe Glu Ala Ser Ser Ser Ile
225                 230                 235                 240

Thr Gln Asn Ser Ser Leu Phe Phe Ser Gly Asn Thr Ala Thr Asp Ala
                245                 250                 255

Ala Gly Lys Gly Gly Ala Ile Tyr Cys Glu Lys Thr Gly Glu Thr Pro
            260                 265                 270

Thr Leu Thr Ile Ser Gly Asn Lys Ser Leu Thr Phe Ala Glu Asn Ser
        275                 280                 285

Ser Val Thr Gln Gly Gly Ala Ile Cys Ala His Gly Leu Asp Leu Ser
    290                 295                 300

Ala Ala Gly Pro Thr Leu Phe Ser Asn Asn Arg Cys Gly Asn Thr Ala
305                 310                 315                 320

Ala Gly Lys Gly Gly Ala Ile Ala Ile Ala Asp Ser Gly Ser Leu Ser
                325                 330                 335

Leu Ser Ala Asn Gln Gly Asp Ile Thr Phe Leu Gly Asn Thr Leu Thr
            340                 345                 350

Ser Thr Ser Ala Pro Thr Ser Thr Arg Asn Ala Ile Tyr Leu Gly Ser
        355                 360                 365

Ser Ala Lys Ile Thr Asn Leu Arg Ala Ala Gln Gly Gln Ser Ile Tyr
    370                 375                 380

Phe Tyr Asp Pro Ile Ala Ser Asn Thr Thr Gly Ala Ser Asp Val Leu
385                 390                 395                 400

Thr Ile Asn Gln Pro Asp Ser Asn Ser Pro Leu Asp Tyr Ser Gly Thr
                405                 410                 415

Ile Val Phe Ser Gly Glu Lys Leu Ser Ala Asp Glu Ala Lys Ala Ala
            420                 425                 430

Asp Asn Phe Thr Ser Ile Leu Lys Gln Pro Leu Ala Leu Ala Ser Gly
        435                 440                 445

Thr Leu Ala Leu Lys Gly Asn Val Glu Leu Asp Val Asn Gly Phe Thr
    450                 455                 460

Gln Thr Glu Gly Ser Thr Leu Leu Met Gln Pro Gly Thr Lys Leu Lys
465                 470                 475                 480

Ala Asp Thr Glu Ala Ile Ser Leu Thr Lys Leu Val Val Asp Leu Ser
                485                 490                 495

Ala Leu Glu Gly Asn Lys Ser Val Ser Ile Glu Thr Ala Gly Ala Asn
            500                 505                 510
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Lys Thr Ile Thr Leu Thr Ser Pro Leu Val Phe Gln Asp Ser Ser Gly
        515                 520                 525

Asn Phe Tyr Glu Ser His Thr Ile Asn Gln Ala Phe Thr Gln Pro Leu
    530                 535                 540

Val Val Phe Thr Ala Ala Thr Ala Ala Ser Asp Ile Tyr Ile Asp Ala
545                 550                 555                 560

Leu Leu Thr Ser Pro Val Gln Thr Pro Glu Pro His Tyr Gly Tyr Gln
                565                 570                 575

Gly His Trp Glu Ala Thr Trp Ala Asp Thr Ser Thr Ala Lys Ser Gly
            580                 585                 590

Thr Met Thr Trp Val Thr Thr Gly Tyr Asn Pro Asn Pro Glu Arg Arg
        595                 600                 605

Ala Ser Val Val Pro Asp Ser Leu Trp Ala Ser Phe Thr Asp Ile Arg
    610                 615                 620

Thr Leu Gln Gln Ile Met Thr Ser Gln Ala Asn Ser Ile Tyr Gln Gln
625                 630                 635                 640

Arg Gly Leu Trp Ala Ser Gly Thr Ala Asn Phe Phe His Lys Asp Lys
                645                 650                 655

Ser Gly Thr Asn Gln Ala Phe Arg His Lys Ser Tyr Gly Tyr Ile Val
            660                 665                 670

Gly Gly Ser Ala Glu Asp Phe Ser Glu Asn Ile Phe Ser Val Ala Phe
        675                 680                 685

Cys Gln Leu Phe Gly Lys Asp Lys Asp Leu Phe Ile Val Glu Asn Thr
    690                 695                 700

Ser His Asn Tyr Leu Ala Ser Leu Tyr Leu Gln His Arg Ala Phe Leu
705                 710                 715                 720

Gly Gly Leu Pro Met Pro Ser Phe Gly Ser Ile Thr Asp Met Leu Lys
                725                 730                 735

Asp Ile Pro Leu Ile Leu Asn Ala Gln Leu Ser Tyr Ser Tyr Thr Lys
            740                 745                 750

Asn Asp Met Asp Thr Arg Tyr Thr Ser Tyr Pro Glu Ala Gln Gly Ser
        755                 760                 765

Trp Thr Asn Asn Ser Gly Ala Leu Glu Leu Gly Gly Ser Leu Ala Leu
    770                 775                 780

Tyr Leu Pro Lys Glu Ala Pro Phe Phe Gln Gly Tyr Phe Pro Phe Leu
785                 790                 795                 800

Lys Phe Gln Ala Val Tyr Ser Arg Gln Gln Asn Phe Lys Glu Ser Gly
                805                 810                 815
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Ala Glu Ala Arg Ala Phe Asp Asp Gly Asp Leu Val Asn Cys Ser Ile
820 825 830

Pro Val Gly Ile Arg Leu Glu Lys Ile Ser Glu Asp Glu Lys Asn Asn
835 840 845

Phe Glu Ile Ser Leu Ala Tyr Ile Gly Asp Val Tyr Arg Lys Asn Pro
850 855 860

Arg Ser Arg Thr Ser Leu Met Val Ser Gly Ala Ser Trp Thr Ser Leu
865 870 875 880

Cys Lys Asn Leu Ala Arg Gln Ala Phe Leu Ala Ser Ala Gly Ser His
885 890 895

Leu Thr Leu Ser Pro His Val Glu Leu Ser Gly Glu Ala Ala Tyr Glu
900 905 910

Leu Arg Gly Ser Ala His Ile Tyr Asn Val Asp Cys Gly Leu Arg Tyr
915 920 925

Ser Phe
930

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<213> Chlamydia pneumoniae

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1 5 10 15

Pro Thr Phe Leu Ala Ala Leu Gly Ala Ser Val Ala Gly Gly Val Met
20 25 30

Gly Thr Tyr Ile Val Val Lys Arg Ile Val Ser Ile Ser Gly Ser Ile
35 40 45

Ser His Ala Ile Leu Gly Gly Ile Gly Leu Thr Leu Trp Ile Gln Tyr
50 55 60

Lys Leu His Leu Ser Phe Phe Pro Met Tyr Gly Ala Ile Val Gly Ala
65 70 75 80

Ile Phe Leu Ala Leu Cys Ile Gly Lys Ile His Leu Lys Tyr Gln Glu
85 90 95

Arg Glu Asp Ser Leu Ile Ala Met Ile Trp Ser Val Gly Met Ala Ile
100 105 110

Gly Ile Ile Phe Ile Ser Arg Leu Pro Thr Phe Asn Gly Glu Leu Ile
115 120 125

Asn Phe Leu Phe Gly Asn Ile Leu Trp Val Thr Pro Ser Asp Leu Tyr
130 135 140

```
Ser Leu Gly Ile Phe Asp Leu Leu Val Leu Gly Ile Val Val Leu Cys
145                 150                 155                 160

His Thr Arg Phe Leu Ala Leu Cys Phe Asp Glu Arg Tyr Thr Ala Leu
                165                 170                 175

Asn His Cys Ser Val Gln Leu Trp Tyr Phe Leu Leu Leu Val Leu Thr
            180                 185                 190

Ala Ile Thr Ile Val Met Leu Ile Tyr Val Met Gly Thr Ile Leu Met
        195                 200                 205

Leu Ser Met Leu Val Leu Pro Val Ala Ile Ala Cys Arg Phe Ser Tyr
    210                 215                 220

Lys Met Thr Arg Ile Met Phe Ile Ser Val Leu Leu Asn Ile Leu Cys
225                 230                 235                 240

Ser Phe Ser Gly Ile Cys Ile Ala Tyr Cys Leu Asp Phe Pro Val Gly
                245                 250                 255

Pro Thr Ile Ser Leu Leu Met Gly Leu Gly Tyr Thr Ala Ser Leu Cys
            260                 265                 270

Val Lys Lys Arg Tyr Asn Pro Ser Thr Pro Ser Pro Val Ser Pro Glu
        275                 280                 285

Ile Asn Thr Asn Val
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Arg Leu Leu Asn Leu Ser Ile Pro Val
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His Lys Thr Gly Asp Glu Asn Arg Lys Gly Phe Arg His Thr Ser
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Val Leu Gly Gln Phe Val Phe
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<210> 21
<211> 9
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Thr Leu Trp Gly Ser Phe Val Asp Val
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<210> 22
<211> 14
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Trp Thr Lys Thr Gly Tyr Asn Pro Asn Pro Glu Arg Arg Gly
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<212> PRT
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Lys Leu Leu Ile Ser Ser Thr Leu Val
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<210> 24
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Glu Lys Ile Ser Glu Asp Glu Lys Asn Asn Phe
5 10

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Tyr Arg Lys Asn Pro Arg Ser Arg Thr
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<210> 26
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<212> PRT
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Phe Leu Phe Gly Asn Ile Leu Trp Val
5

<210> 27
<211> 10
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<400> 27
His Leu Lys Tyr Gln Glu Arg Glu Asp Ser
5 10